REMARKS

This Amendment is responsive to the Final Office Action mailed April 30, 2004. Claims 1-44 were rejected. With this Response, claims 1 and 20 have been amended and claim 45 has been added. Claims 1-45 remain pending in the application and are presented for reconsideration and allowance.

Claim Objections

The Examiner objected to grammatical informalities in claim 1. With this Response, Applicants have corrected the informalities and respectfully request withdrawal of this objection.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejected claims 1-3, 5-7, 10-14, 17-18 and 20-44 under 35 U.S.C. § 102(e) for being anticipated by the Forward et al. U.S. Patent No. 6,116,544. The Forward et al. patent is directed to electyrodynamic tethers, and discusses several embodiments and uses thereof including a rotating tether system. However, Applicants respectfully submit that rotating tether systems as disclosed in the Forward et al. patent do not teach or suggest the tether system and method of operating a tether system as recited by amended independent claims 1 and 20, respectively.

Amended independent claim 1 includes at least one spinning electrodynamic tether adapted to conduct electrical current and an electrical control system adapted to maintain the spinning of the electrodynamic tether at an average rate exceeding approximately two times an orbital angular rate with respect to inertial space. Amended independent claim 20 includes spinning an electrodynamic tether in low Earth orbit and controlling an electric current in the tether to maintain the spinning of the tether at an average rate exceeding approximately two times an orbital angular rate of the low Earth orbit. The Forward et al. patent does not teach or suggest an electric control system adapted to maintain the spinning of an electrodynamic tether at an average rate exceeding approximately two times an orbital angular rate with respect to inertial space by controlling an electric current in the tether, as claimed by amended independent claim

1. The Forward et al. patent also does not teach or suggest a method of operating a spinning electrodynamic tether system including controlling an electric current in the tether to maintain the spinning of the tether at an average rate exceeding approximately two time an orbital angular rate of the low Earth orbit, as claimed by amended independent claim 20.

Although the Forward et al. patent discloses a control system for stabilizing a conductive tether, the preferred embodiments of tether systems taught by the Forward et al. patent are designed to maintain a particular angle of the tether relative to the Earth's magnetic field (e.g., an optimal angle of 35.26 degrees). While the maintaining of such an angle involves rotating the tether relative to an associated spacecraft as the entire tether/spacecraft system orbits around the Earth, such rotating is only temporary in nature and only as required to adjust the tether to the particular angle, and does not involve maintaining the continuous "spinning" of the tether at an average rate exceeding approximately two times an orbital revolution of the system with respect to inertial space.

Similarly, while the Forward et al. patent also describes a spacecraft 700 that is rotating with an angular velocity 718 that causes a centrifugal force 720 to place an instability-countering tension on conductive tether 720 (column 18, lines 28-36), the Forward et al. patent does not teach or suggest controlling the electric current in the tether to maintain the spinning of the tether at an average rate exceeding two times an orbital angular rate with respect to an orbital angular rate of the low Earth orbit of the spacecraft. Instead, with regard to a rotating spacecraft 800, the Forward et al. patent discloses only that a control system can time the application of a current in the rotating tether 806 when rotating tether 806 is at a desired angle to the Earth's magnetic field so as to cause a force 820 that results in a useful adjustment to the orbit of spacecraft 800 (column 18, lines 57-64).

In light of the above, Forward et al. does not teach or suggest a tether system or a method for operating a tether system as claimed respectively by amended independent claims 1 and 20. Furthermore, since dependent claims 2-3, 4, 5-7, 10-14, and 17-18, and claims 21-44 respectively further define patentably distinct independent claims 1 and 20, these dependent claims are also believed allowable. In view of the above, Applicants respectfully request that the

rejection of claims 1-3, 4, 5-7, 10-14, and 17-18, and claims 20-44 under 35 U.S.C. § 102 be withdrawn, and that these claims be allowed.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 4, 8-9, 15-16 and 19 under 35 U.S.C. § 103(e) as being unpatentable over the Forward et al. patent. Since dependent claims 4, 8-9, 15-16 and 19 further define patentably distinct independent claim 1, these dependent claims are also believed to be allowable. Therefore, Applicants respectfully request that the rejection of claims 4, 8-9, 15-16 and 19 under 35 U.S.C. § 102 be withdrawn, and that these claims be allowed.

Added Claims

New dependent claim 45 further defines patentably distinct independent claim 1. As such, Applicants believe new dependent claim 45 to be allowable over the cited references, and respectfully request allowance of new claim 45.

CONCLUSION

In view of the above, Applicants respectfully submit that pending claims 1-45 are in condition for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of pending claims 1-45 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number to facilitate prosecution of this application.

Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 30th day of June, 2004.

By
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